

INDEX

INDEX (CONTINUED)

[illegible][illegible]

	PLAN
	REFERENCE
	NO.
	SHEET
	OF
	SHEETS

NOTE: ALL SHEET REFERENCES, FIRST NOS. OF STRUCTURE CODE DESIGNATIONS AND MATCH LINE SHEET REFERENCES, ETC., THROUGHOUT THE PLANS, REFER TO THE ENTRY IN THE PLAN REFERENCE NUMBER BOX.

[illegible]

APPROXIMATELY 25 SIGNALIZED INTERSECTIONS
4 LOOPS IN THIS CONTRACT

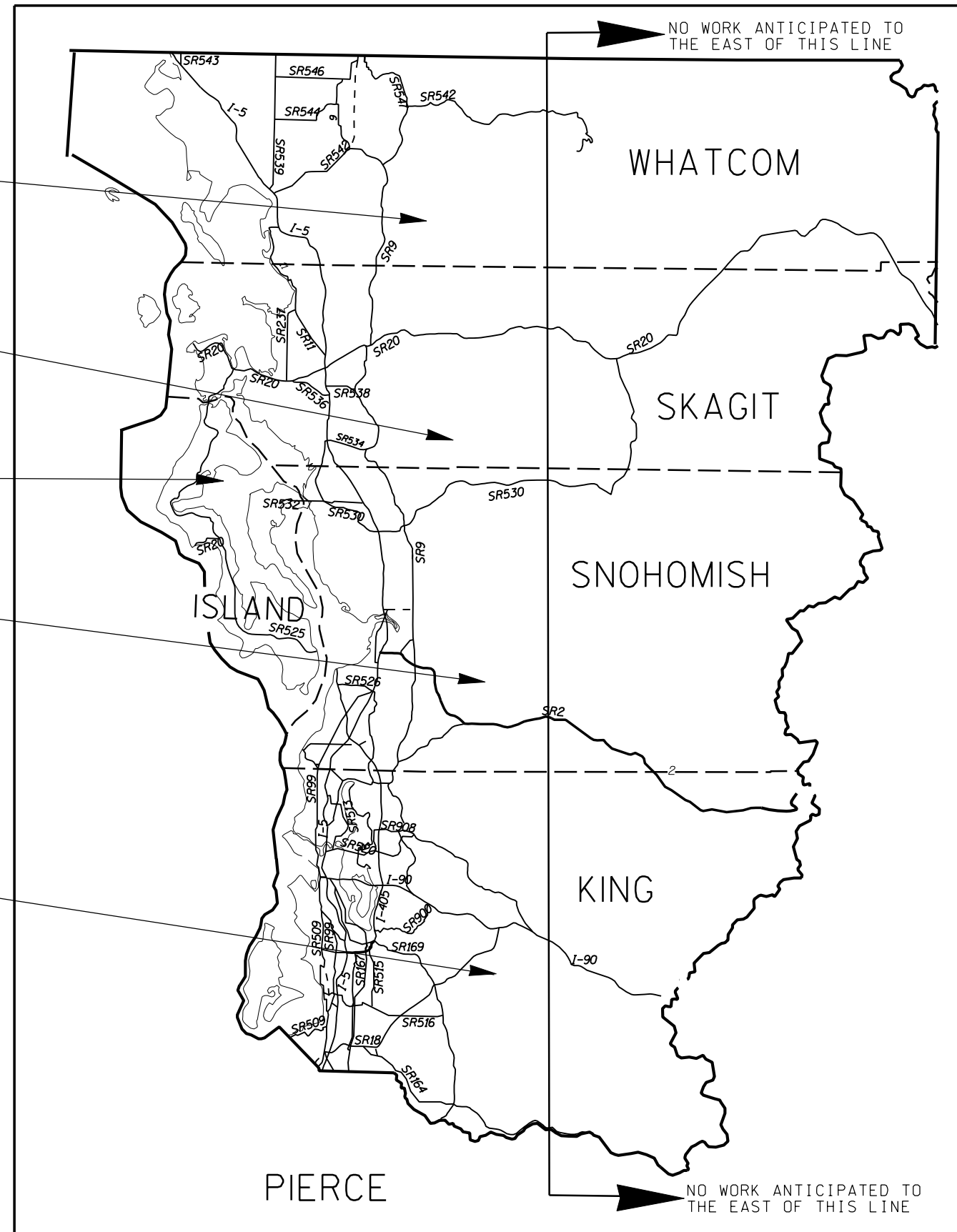
APPROXIMATELY 50 SIGNALIZED INTERSECTIONS
5 LOOPS IN THIS CONTRACT

APPROXIMATELY 15 SIGNALIZED INTERSECTIONS
12 LOOPS IN THIS CONTRACT

APPROXIMATELY 110 SIGNALIZED INTERSECTIONS



APPROXIMATELY 275 SIGNALIZED INTERSECTIONS

NOTE:
THIS SHEET SHOWS THE GENERAL LOCATION OF EXISTING
SIGNALIZED INTERSECTIONS AND FREEWAY LOOPS IN
THE NORTHWEST REGION. THE CONTRACTOR SHALL BE
PREPARED TO INSTALL LOOPS IN ANY LOCATION
WITHIN THE DETAIL AREA SHOWN ON THIS SHEET.

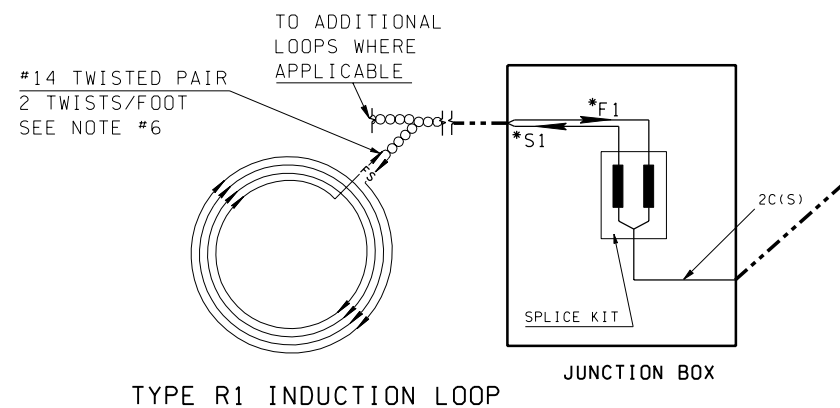


DETAIL AREA
NORTHWEST REGION

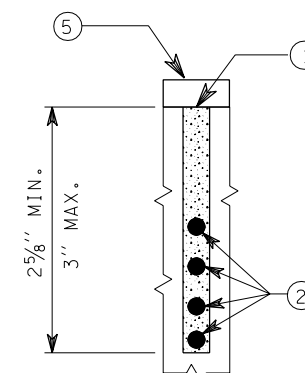
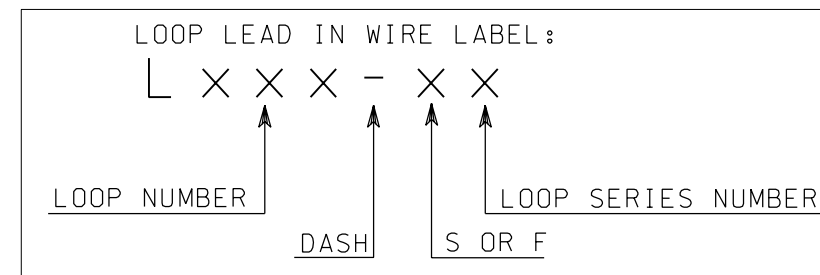


FILE NAME s:\414126\Electrical\Loop Replacement English\loop_replace.dgn										REGION NO. STATE 10 WASH		FED.AID PROJ.NO.		 Washington State Department of Transportation		DETECTION LOOP REPLACEMENT CONTRACT		PLOT16	
TIME 06:34:41 PM								VI											
DATE 05/01/2003								SHEET 2 OF 16 SHEETS											
DESIGNED BY V. LEE						JOB NUMBER		CONTRACT NO.		LOCATION NO.		 Washington State Department of Transportation		VICINITY MAP					
ENTERED BY V. LEE																			
CHECKED BY D. DO																			
PROJ. ENGR. B. BRIGSS																			
REGIONAL ADM. L. ENG		REVISION		DATE		BY													

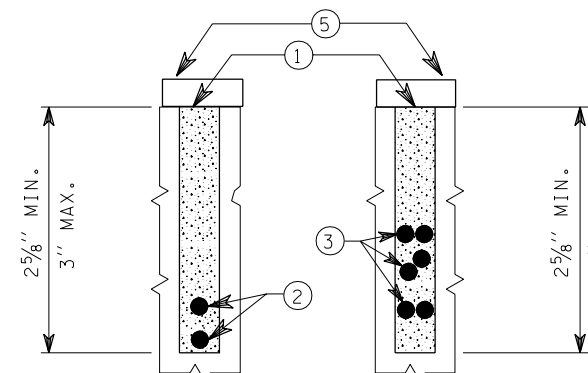
LOOP INSTALLATION NOTES



1. INSTALL JUNCTION BOX AND LEAD-IN CONDUIT.
2. SAWCUT LOOP SLOTS AND LEAD-IN SLOTS.
3. LAY OUT LOOP WIRE STARTING AT JUNCTION BOX, ALLOWING 5' MINIMUM SLACK.
4. INSTALL WIRE IN LOOP SLOT AS SHOWN.
5. FINISH LAYING OUT WIRE AT JUNCTION BOX AND IDENTIFY LEADS WITH LOOP NUMBER AND "S" FOR START AND "F" FOR FINISH.
6. TWIST EACH PAIR OF LEAD WIRES TWO TIMES PER FOOT FROM LOOP TO JUNCTION BOX. REVERSE DIRECTION OF TWIST FOR EACH SUCCESSIVE PAIR INSTALLED.
7. CONSTRUCT SUPPLEMENTAL SPLICE CONTAINING ANY SERIES OR PARALLEL LOOP CONNECTIONS REQUIRED IN PLANS. SUPPLEMENTAL SPLICES ARE SUBJECT TO THE SAME REQUIREMENTS SHOWN FOR THE LOOP LEAD AND SHIELDED CABLE SPLICE.
8. SPLICE LOOP LEADS OR SUPPLEMENTAL SPLICE LEADS TO SHIELDED CABLE AS NOTED IN THE PLANS.
9. COMPLETE INSTALLATION AND TEST LOOP CIRCUITS OR COMBINATION LOOP CIRCUITS. SEE STANDARD SPECIFICATION 8-20.3(14)D.
10. FRONT OF LOOP SHALL BE MEASURED FROM BACK OF STOP BAR, OR BACK OF CROSSWALK WHERE NO STOP BAR IS INSTALLED.
11. CONDUIT FOR LOOP STUBOUT SHALL BE SCHEDULE 40 PVC.
12. LABEL ALL LOOP LEAD IN WIRES WITH BOTH LOOP NUMBER AND LOOP SERIES NUMBER ON TYPE R3 LOOPS AS SHOWN BELOW.



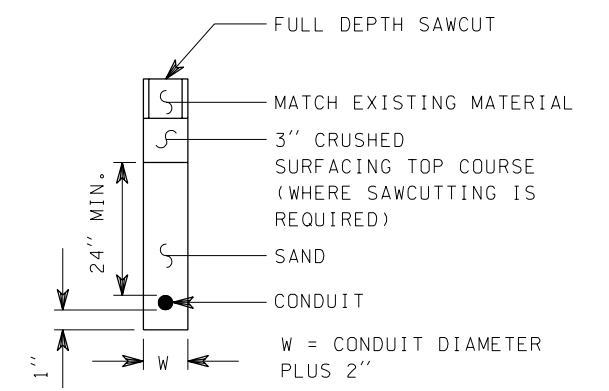
SECTION A-A



SECTION B-B

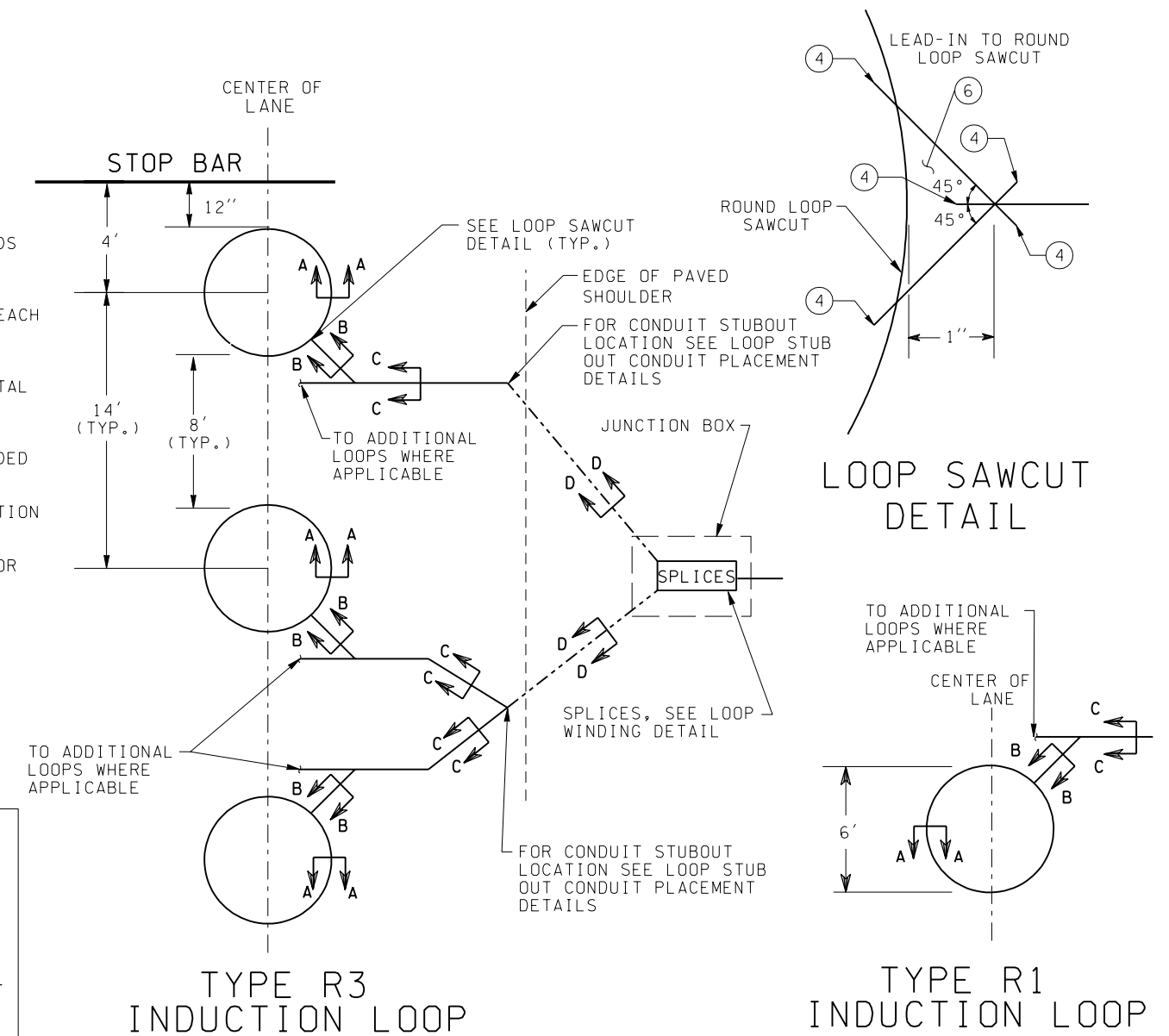


SECTION C-C




APPLICABLE IN IMPROVED AREAS
WHERE SAWCUTTING IS NECESSARY
BETWEEN CONDUIT STUBOUT AND
ASSOCIATED JUNCTION BOX.

SECTION D-D



FILE NAME s:\414126\Electrical\Loop Replacement English\loop_replace.dgn										PLOT 1	
TIME 06:24:34 PM						REGION NO.		STATE		FED.AID PROJ.NO.	
DATE 05/01/2003						10		WASH			
						JOB NUMBER					
DESIGNED BY V. LEE								CONTRACT NO.		LOCATION NO.	
ENTERED BY H. TRINH											
CHECKED BY D. DO											
PROJ. ENGR. B. BRIGSS											
REGIONAL ADM. L. ENG		REVISION		DATE		RY					



Washington State
Department of Transportation

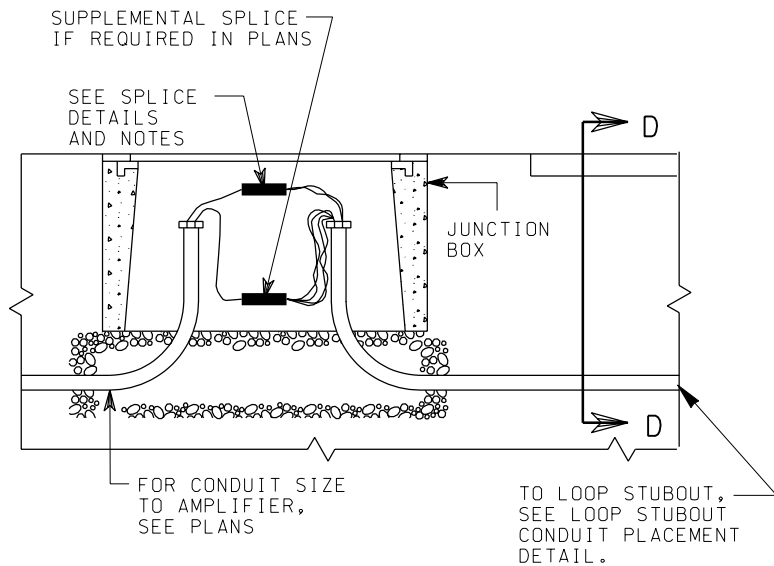
**DETECTION LOOP
REPLACEMENT CONTRACT**

LOOP DETAILS

P.F. STAMP BOX DATE

P.F. STAMP BOX DATE

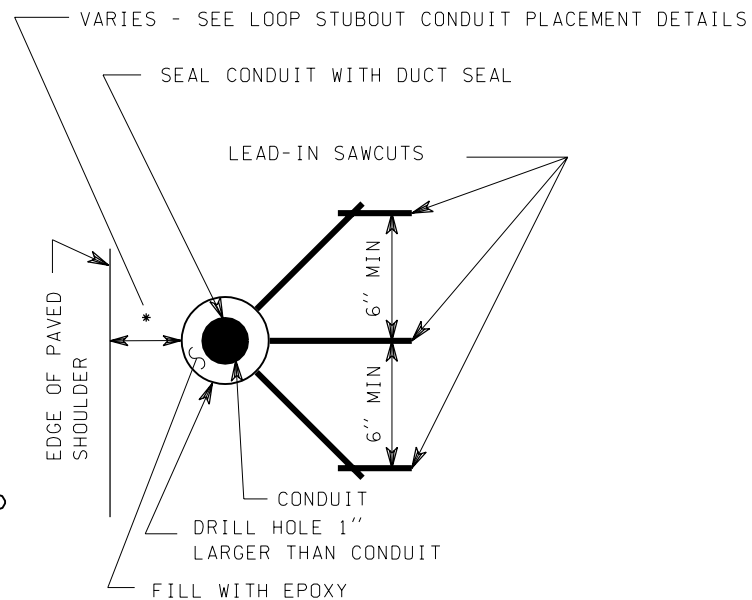
SHEET
3
OF
16
SHEETS



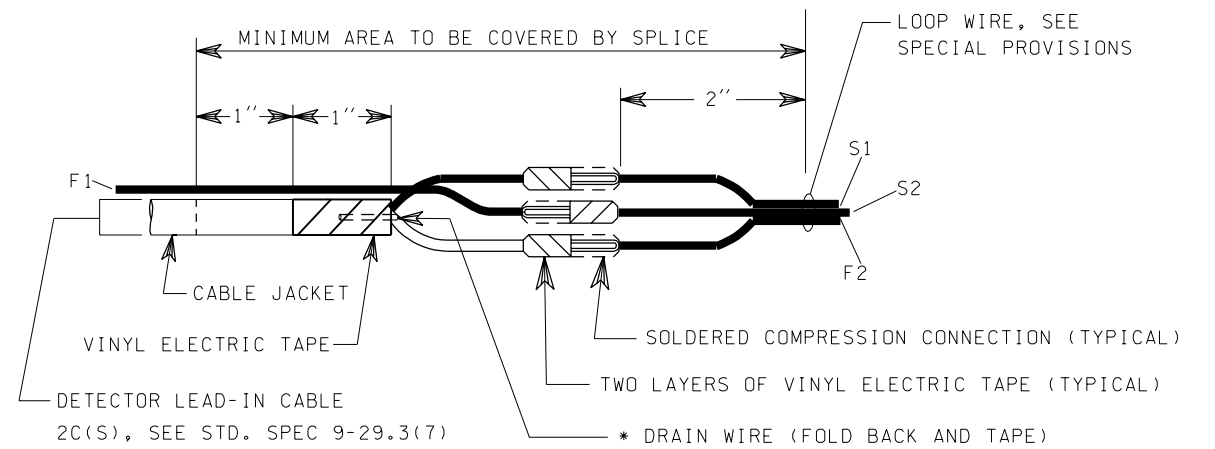
TYPICAL CONDUIT PLACEMENT FOR LOOP LEAD-IN WIRES

LOOP LEAD PAIRS	1-2	3	4-5	6-8	9-12
CONDUIT SIZE (MIN.)	1	1¼	1½	2	2½

TABLE A



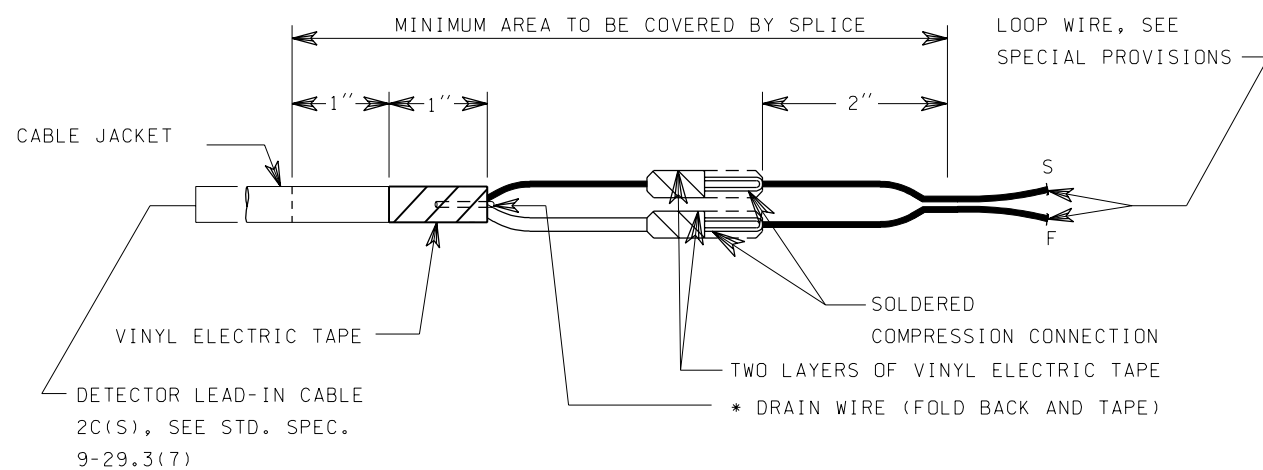
LEAD-IN SAWCUTS AND STUBOUT DETAIL
DETAIL A



* GROUND DRAIN WIRE AT AMPLIFIER ONLY.
SEE SPECIAL PROVISIONS FOR SPLICE MATERIAL.

SPLICE DETAIL FOR TYPE R2 INDUCTION LOOPS
(2 ROUND LOOP CONNECTED IN SERIES)

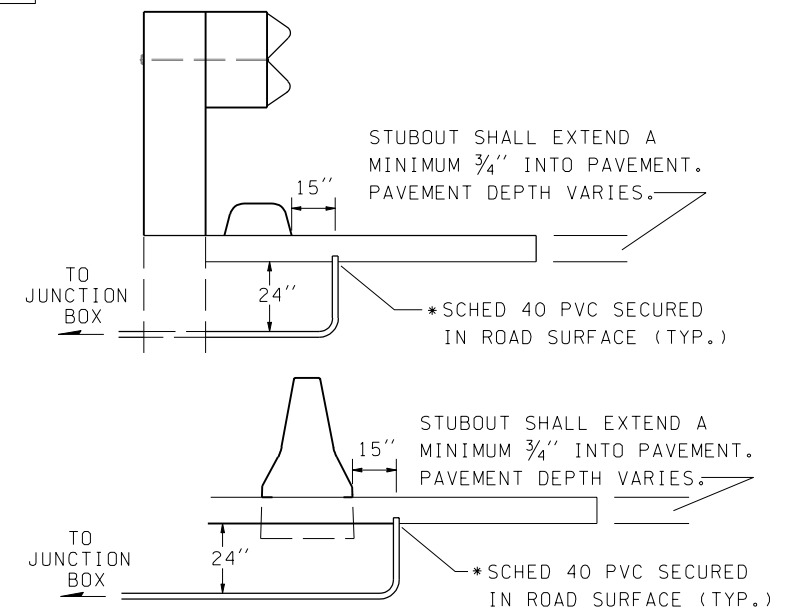
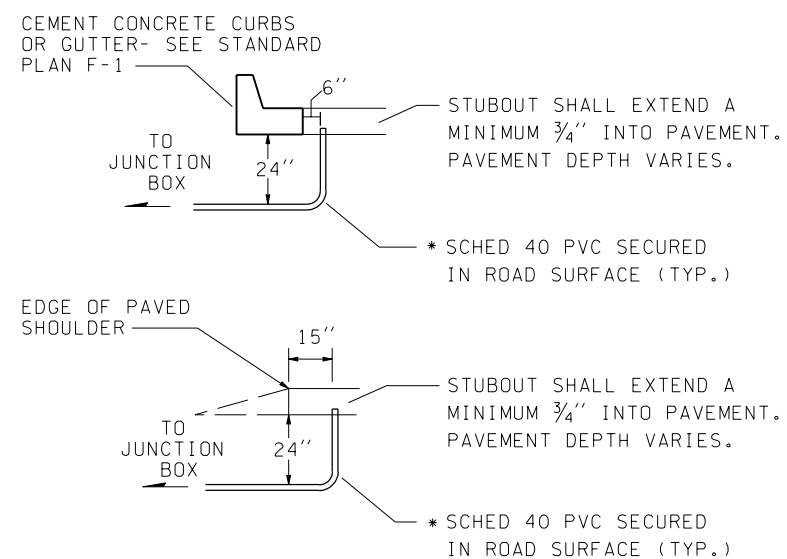
ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE NOTED.
SEE SPECIAL PROVISIONS FOR
SPLICE REQUIREMENTS.



* GROUND DRAIN WIRE AT AMPLIFIER ONLY.
SEE SPECIAL PROVISIONS FOR SPLICE MATERIAL.


SPLICE DETAIL

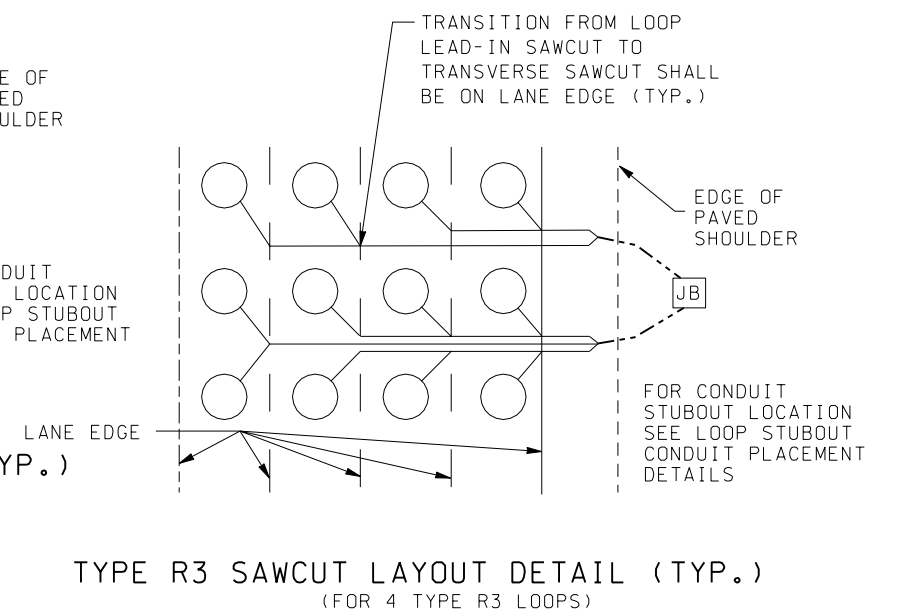
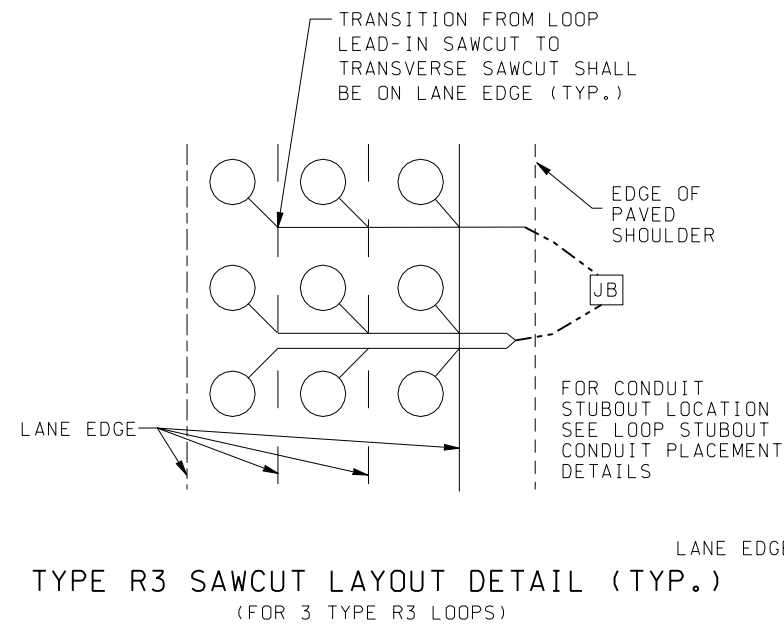
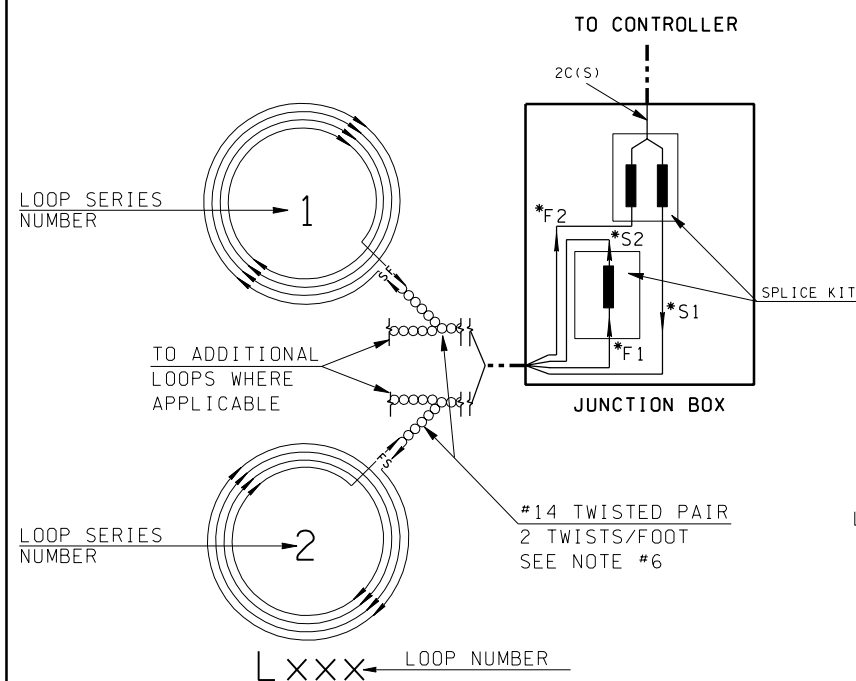
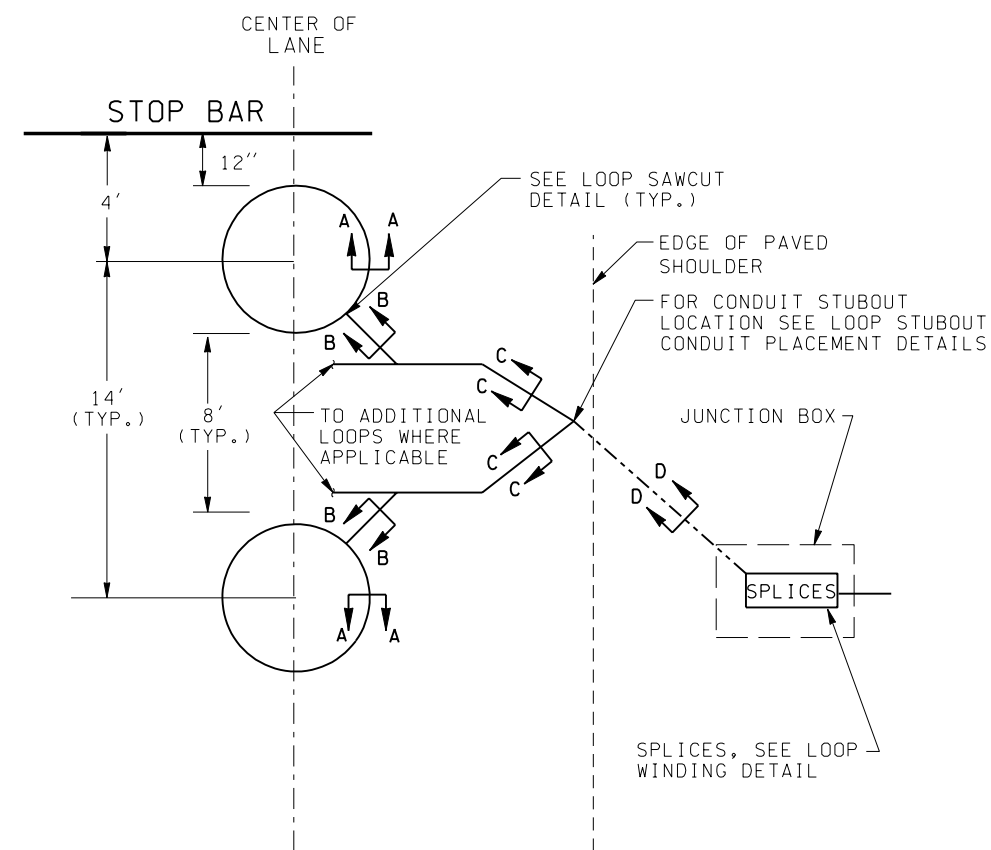
NOTE: SPLICE KITS SHALL BE CENTERED ON CONDUCTORS AND SUFFICIENT SLACK SHALL BE PROVIDED THAT THE SPLICE CAN BE RAISED A MINIMUM OF 18" ABOVE GROUND LINE.



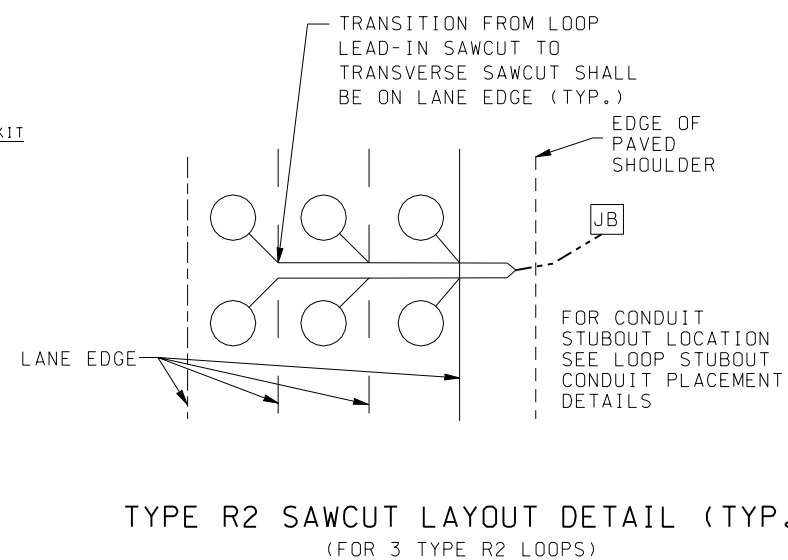
* SEE DETAIL A


LOOP STUBOUT CONDUIT PLACEMENT DETAILS

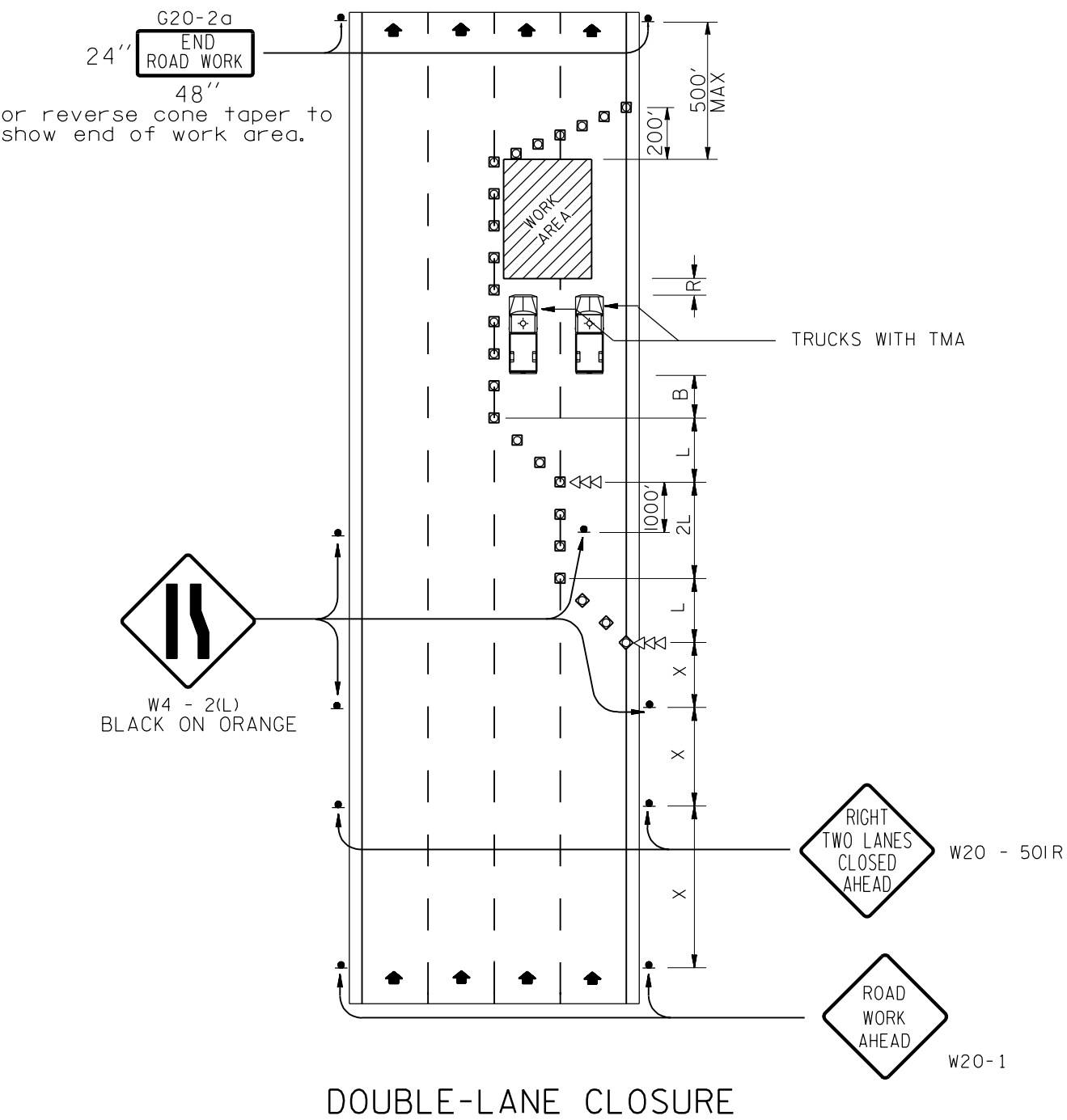
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DATE: 05/07/2003		CONTRACT NO.		LOCATION NO.		SHEET 4 OF 16 SHEETS	
DESIGNED BY: V. LEE						<div style="text-align: center;">  <p>Washington State Department of Transportation</p> </div>	
ENTERED BY: H. TRINH							
CHECKED BY: D. DO							
PROJ. ENGR. B. BRIGSS							
REGIONAL ADM. L. ENG	REVISION	DATE	BY	P.E. STAMP BOX		<div style="text-align: center;"> <p>DETECTION LOOP REPLACEMENT CONTRACT</p> <p>LOOP DETAILS</p> </div>	



ALL DIMENSIONS ARE IN INCHES
UNLESS OTHERWISE NOTED.



FILE NAME s:\414126\Electrical\Loop Replacement English\loop_replace.dgn										PLOT3	
TIME 01:21:07 PM						REGION NO.		STATE		FED.AID PROJ.NO.	
DATE 05/07/2003						10		WASH			
						JOB NUMBER					
DESIGNED BY V. LEE								CONTRACT NO.		LOCATION NO.	
ENTERED BY H. TRINH											
CHECKED BY D. DO											
PROJ. ENGR. B. BRIGSS										 Washington State Department of Transportation	
REGIONAL ADM. L. ENG											
		REVISION		DATE		BY				<div style="display: flex; justify-content: space-around;"> <div> DATE _____ P.E. STAMP BOX _____ </div> <div> DATE _____ P.E. STAMP BOX _____ </div> </div>	
										DETECTION LOOP REPLACEMENT CONTRACT	
										LOOP DETAILS	
										SHEET 5 OF 16 SHEETS	



LEGEND

TRAFFIC SAFETY DRUMS

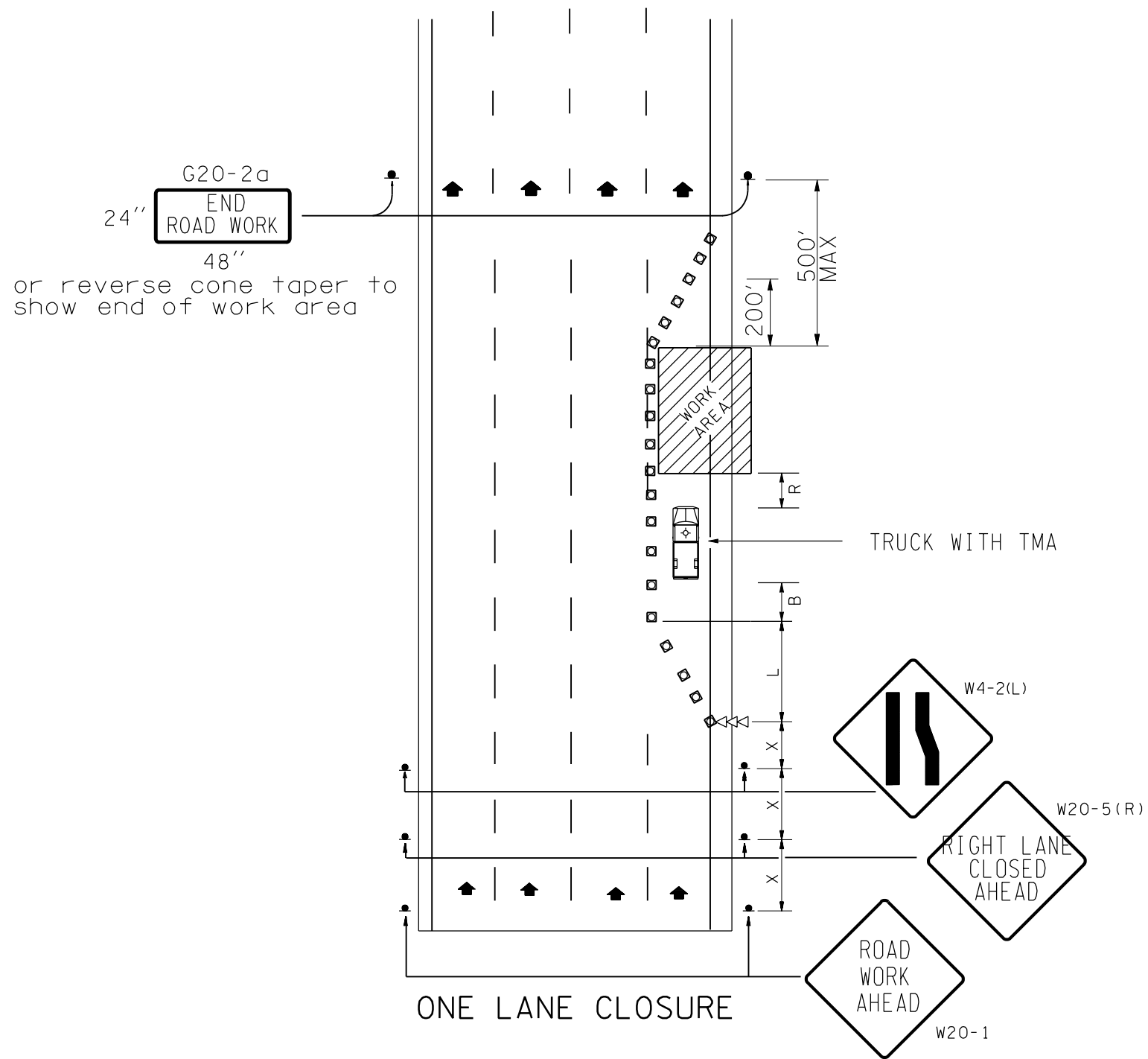
SEQUENTIAL ARROW SIGN

SIGN SPACING = X (feet)		
FREEWAYS & EXPRESSWAYS	55/70 MPH	1500'± (OR AS PER MUTCD)
RURAL ROADS	45/55 MPH	500' ±
URBAN ARTERIALS	35/40 MPH	350' ±
URBAN STREETS RESIDENTIAL & BUSINESS DISTRICTS	25/30 MPH	200' ±

MINIMUM TAPER LENGTH = L (feet)								
Lane Width (feet)	Posted Speed (mph)							
	25	30	35	40	45	50	55	60
10	105	150	207	265	450	500	550	-
11	118	167	226	295	495	550	605	660
12	128	180	246	320	540	600	660	720

CHANNELIZING DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60
25/30	20	40

BUFFER DATA										
BUFFER SPACE = B										
SPEED (MPH)	25	30	35	40	45	50	55	60	65	70
LENGTH (feet)	55	85	120	170	220	280	335	415	485	585
BUFFER VEHICLE ROLL AHEAD DISTANCE = R										
VEHICLE TYPE	TYPICAL VEHICLE LOADED WEIGHT (LBS)				POSTED SPEED (MPH)		STATIONARY OPERATION (feet)			
4 YARD DUMP TRUCK	24,000				60-70		100			
					50-55		75			
					45		50			
2 TON CARGO TRUCK	15,000				60-70		150			
					50-55		100			
					45		75			
1 TON CARGO TRUCK	10,000				60-70		200			
					50-55		150			
					45		100			
ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT										



LEGEND

■ ■ ■

TRAFFIC SAFETY DRUMS

➤➤

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					45		50			
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					50-55		100			
					45		75			
1 TON CARGO TRUCK	10,000				60-70		200			
					50-55		150			
					45		100			
ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT										

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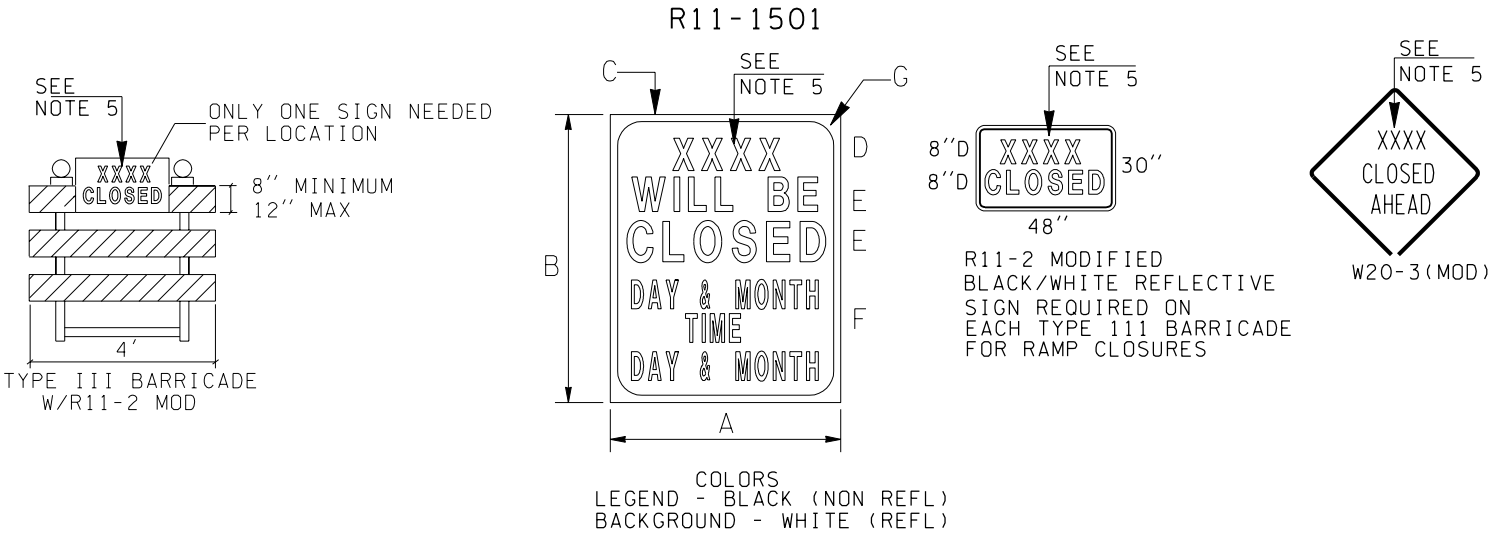
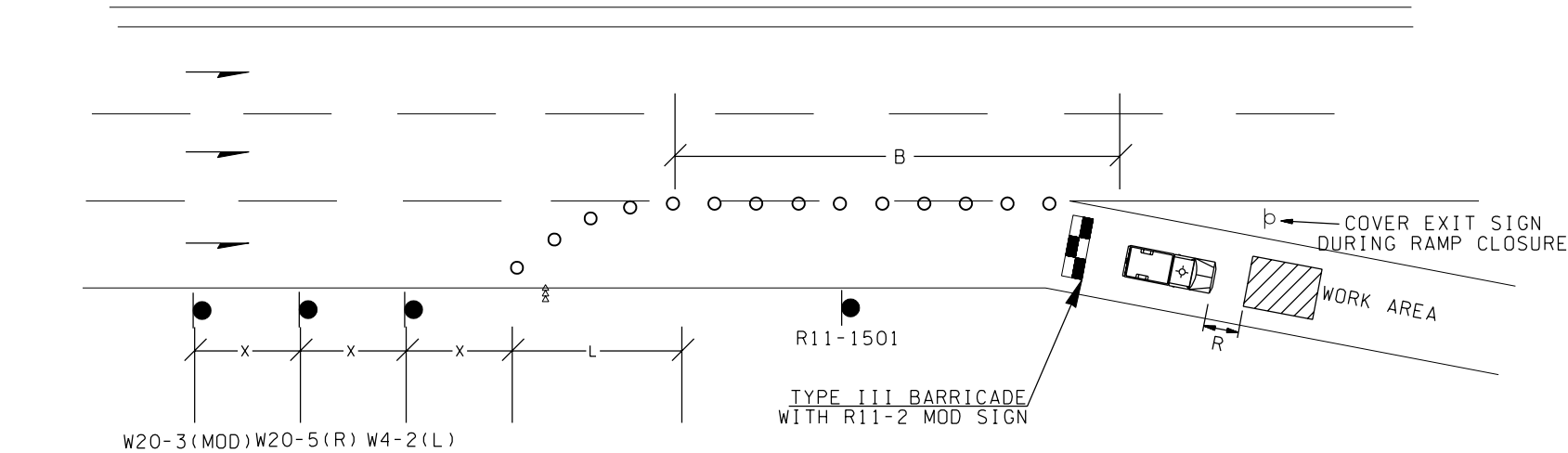
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	25	30	35	40	45	50	55	60
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					45		50				
2 TON CARGO TRUCK	15,000				60-70		150				
					50-55		100				
					45		75				
1 TON CARGO TRUCK	10,000				60-70		200				
					50-55		150				
					45		100				
ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT											

NOTE:

- 1) ACTUAL PLAQUE MESSAGES TO BE DETERMINED BY THE ENGINEER.
- 2) VERIFY SIGN LOCATION WITH ENGINEER.
- 3) SIGN R11-1501 TO BE PLACED FIVE DAYS IN ADVANCE OF THE CLOSURE.
- 4) R11-1501 SIGN TO BE REMOVED DURING CLOSURE.
- 5) USE "EXIT" FOR OFF RAMPS AND "RAMP" FOR ON RAMPS.
- 6) DETOUR FOR RAMP OR EXIT CLOSURES SHALL BE PROVIDED.



DIMENSIONS						
A	B	C	D	E	F	G
48''	60''	0.8''	6''D	8''D	5''C	4''

TRAFFIC CONTROL PLAN
EXIT AND RAMP CLOSURE

LEGEND	
	SIGN AND POST
	SEQUENTIAL ARROW SIGN
	TRAFFIC SAFETY DRUMS
	TYPE III BARRICADE
	TRUCK WITH TMA (TRUCK MOUNTED ATTENUATOR)

FILE NAME s:\414126\Electrical\Loop Replacement English\loop_replace.dgn																																																		PLOT6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									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					45		50			
2 TON CARGO TRUCK	15,000				60-70		150			
					50-55		100			
					45		75			
1 TON CARGO TRUCK	10,000				60-70		200			
					50-55		150			
					45		100			
ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT										



FILE NAME s:\414126\Electrical\Loop Replacement English\loop_replace.dgn										PLOT9	
TIME 06:30:12 PM						REGION NO.		STATE		FED.AID PROJ.NO.	
DATE 05/01/2003						10		WASH			
						JOB NUMBER					
DESIGNED BY V. LEE										LOCATION NO.	
ENTERED BY H. TRINH											
CHECKED BY D. DO											
PROJ. ENGR. B. BRIGGS						CONTRACT NO.					
REGIONAL ADM. L. ENG		REVISION		DATE		RY					

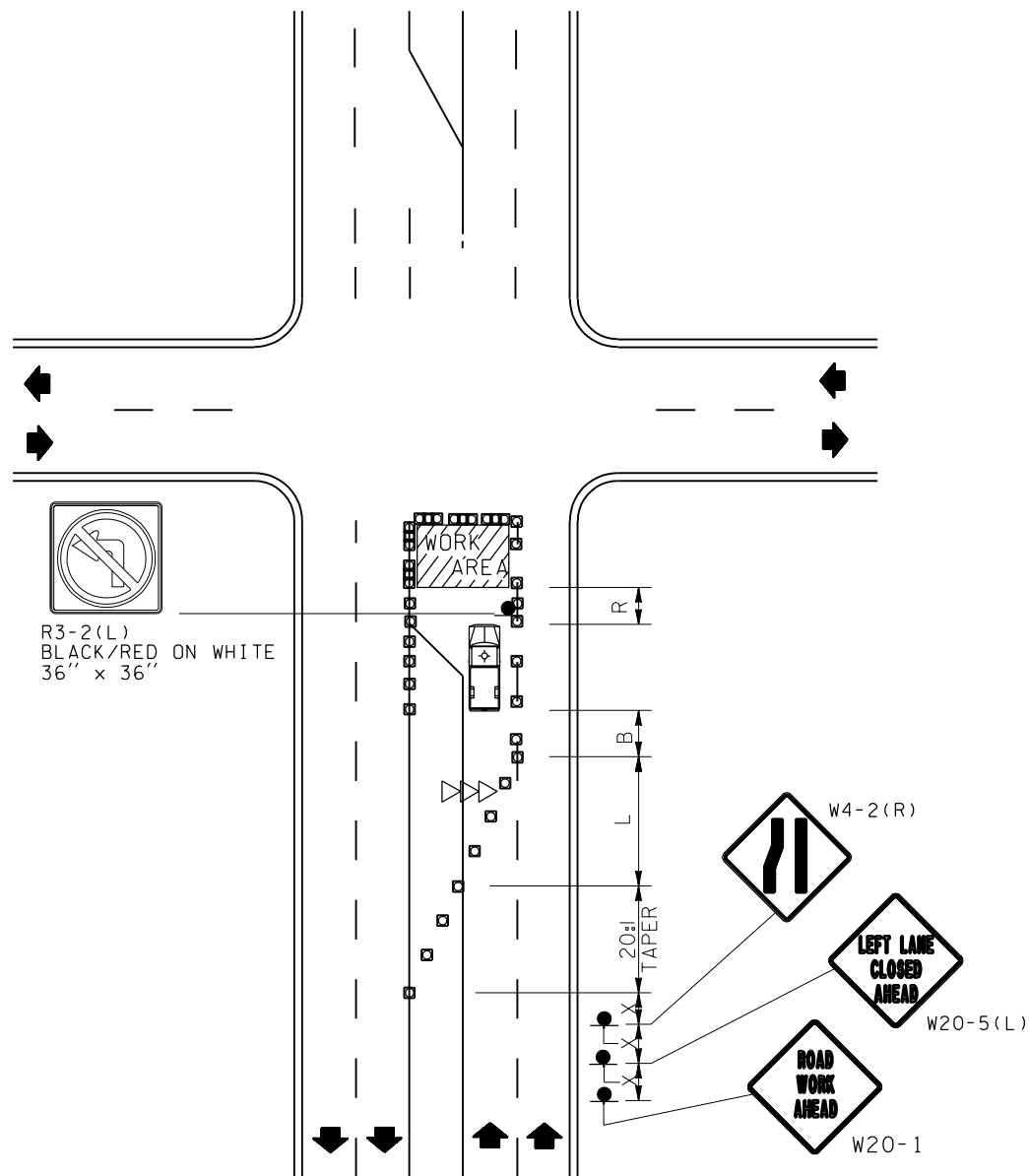


Washington State
Department of Transportation

DETECTION LOOP
REPLACEMENT CONTRACT

TRAFFIC CONTROL PLAN

SHEET
11
OF
16
SHEETS



TRAFFIC CONTROL PLAN
INTERSECTION TWO LANES CLOSED

LEGEND

TRAFFIC SAFETY DRUMS

SEQUENTIAL ARROW SIGN

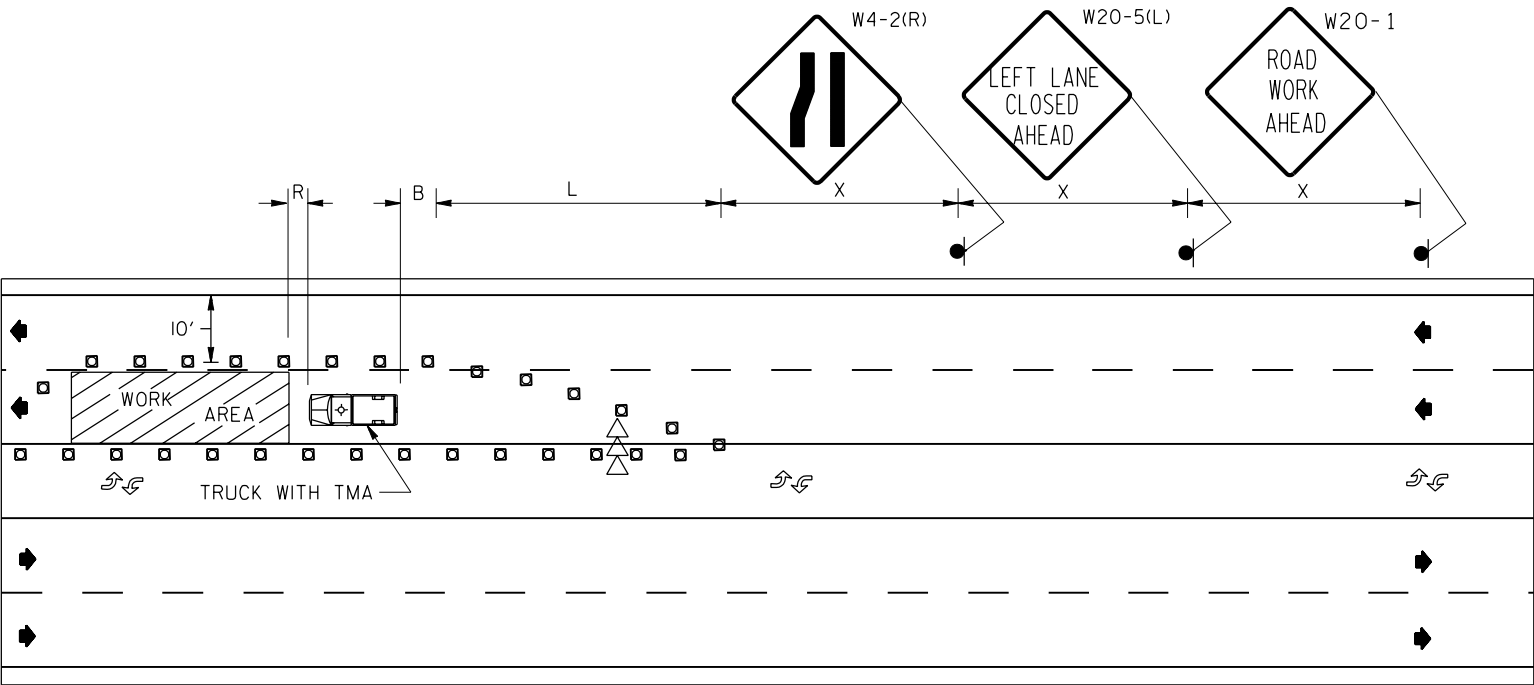
TRUCK WITH TMA

SIGN SPACING = X (feet)			
FREEWAYS & EXPRESSWAYS	55/70 MPH	1500'±	(OR AS PER MUTCD)
RURAL ROADS	45/55 MPH	500' ±	
URBAN ARTERIALS	35/40 MPH	350' ±	
URBAN STREETS RESIDENTIAL & BUSINESS DISTRICTS	25/30 MPH	200' ±	

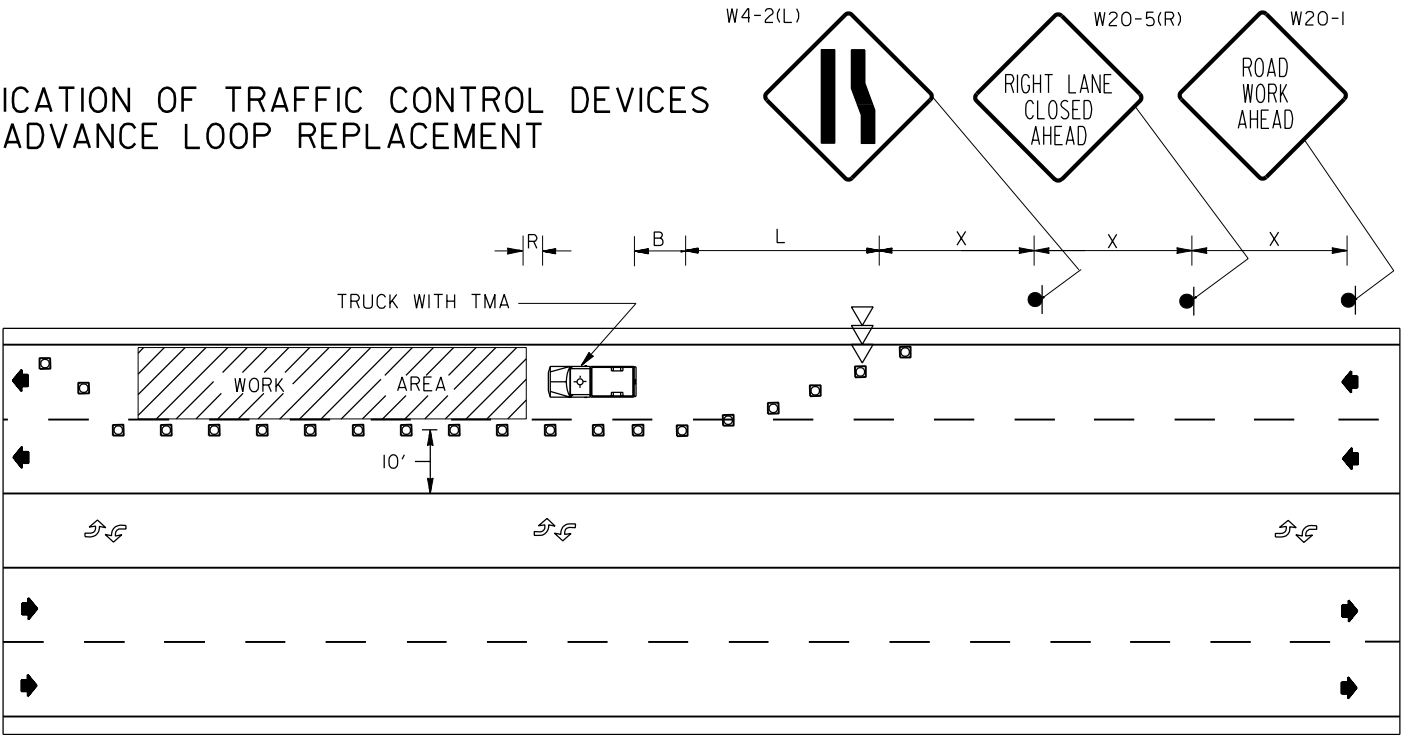
MINIMUM TAPER LENGTH = L (feet)								
Lane Width (feet)	Posted Speed (mph)							
	25	30	35	40	45	50	55	60
10	105	150	207	265	450	500	550	-
11	118	167	226	295	495	550	605	660
12	128	180	246	320	540	600	660	720

CHANNELIZING DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60
25/30	20	40

BUFFER DATA										
BUFFER SPACE = B										
SPEED (MPH)	25	30	35	40	45	50	55	60	65	70
LENGTH (feet)	55	85	120	170	220	280	335	415	485	585
BUFFER VEHICLE ROLL AHEAD DISTANCE = R										
VEHICLE TYPE	TYPICAL VEHICLE LOADED WEIGHT (LBS)				POSTED SPEED (MPH)		STATIONARY OPERATION (feet)			
4 YARD DUMP TRUCK	24,000				60-70		100			
					50-55		75			
					45		50			
2 TON CARGO TRUCK	15,000				60-70		150			
					50-55		100			
					45		75			
1 TON CARGO TRUCK	10,000				60-70		200			
					50-55		150			
					45		100			
ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT										



TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
FOR ADVANCE LOOP REPLACEMENT



TRAFFIC CONTROL PLAN
ONE LANE CLOSED

LEGEND

TRAFFIC SAFETY DRUMS

SEQUENTIAL ARROW SIGN

SIGN SPACING = X (feet)			
FREEWAYS & EXPRESSWAYS	55/70 MPH	1500'± (OR AS PER MUTCD)	
RURAL ROADS	45/55 MPH	500' ±	
URBAN ARTERIALS	35/40 MPH	350' ±	
URBAN STREETS RESIDENTIAL & BUSINESS DISTRICTS	25/30 MPH	200' ±	

MINIMUM TAPER LENGTH = L (feet)								
Lane Width (feet)	Posted Speed (mph)							
	25	30	35	40	45	50	55	60
10	105	150	207	265	450	500	550	-
11	118	167	226	295	495	550	605	660
12	128	180	246	320	540	600	660	720

CHANNELIZING DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60
25/30	20	40

BUFFER DATA										
BUFFER SPACE = B										
SPEED (MPH)	25	30	35	40	45	50	55	60	65	70
LENGTH (feet)	55	85	120	170	220	280	335	415	485	585
BUFFER VEHICLE ROLL AHEAD DISTANCE = R										
VEHICLE TYPE	TYPICAL VEHICLE LOADED WEIGHT (LBS)				POSTED SPEED (MPH)		STATIONARY OPERATION (feet)			
4 YARD DUMP TRUCK	24,000				60-70		100			
					50-55		75			
					45		50			
2 TON CARGO TRUCK	15,000				60-70		150			
					50-55		100			
					45		75			
1 TON CARGO TRUCK	10,000				60-70		200			
					50-55		150			
					45		100			
ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT										



 TRAFFIC SAFETY DRUMS
 SEQUENTIAL ARROW SIGN

* FOR SIGNING ON RAMPS, THE SPACING SHALL BE "AS AVAILABLE".

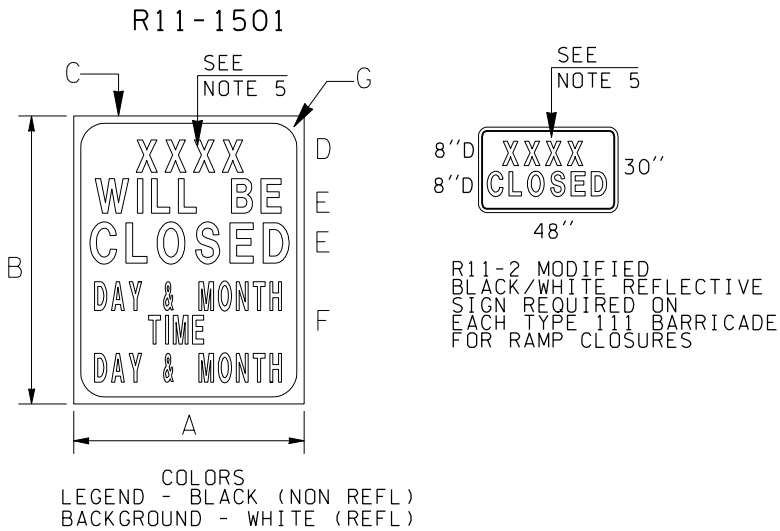
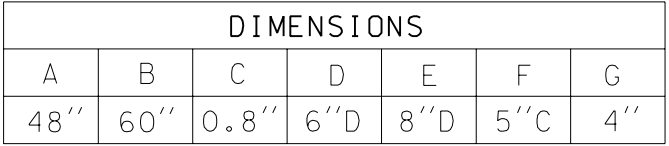
SIGN SPACING = X (feet)		
FREEWAYS & EXPRESSWAYS	55/70 MPH	1500' ± (OR AS PER MUTCD)
RURAL ROADS	45/55 MPH	500' ±
URBAN ARTERIALS	35/40 MPH	350' ±
URBAN STREETS RESIDENTIAL & BUSINESS DISTRICTS	25/30 MPH	200' ±

MINIMUM TAPER LENGTH = L (feet)								
Lane Width (feet)	Posted Speed (mph)							
	25	30	35	40	45	50	55	60
10	105	150	207	265	450	500	550	-
11	118	167	226	295	495	550	605	660
12	128	180	246	320	540	600	660	720

CHANNELIZING DEVICE SPACING (feet)		
MPH	TAPER	TANGENT
50/70	40	80
35/45	30	60
25/30	20	40

BUFFER DATA										
BUFFER SPACE = B										
SPEED (MPH)	25	30	35	40	45	50	55	60	65	70
LENGTH (feet)	55	85	120	170	220	280	335	415	485	585
BUFFER VEHICLE ROLL AHEAD DISTANCE = R										
VEHICLE TYPE	TYPICAL VEHICLE LOADED WEIGHT (LBS)				POSTED SPEED (MPH)		STATIONARY OPERATION (feet)			
4 YARD DUMP TRUCK	24,000				60-70		100			
					50-55		75			
					45		50			
2 TON CARGO TRUCK	15,000				60-70		150			
					50-55		100			
					45		75			
1 TON CARGO TRUCK	10,000				60-70		200			
					50-55		150			
					45		100			
ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT										

FILE NAME s:\41426\Electrical\Loop Replacement English\loop_replace.dgn										<div></div> <div>Washington State Department of Transportation</div>		<div>DETECTION LOOP REPLACEMENT CONTRACT</div>		PLOT12	
TIME 06:32:08 PM						REGION NO.		STATE						FED.AID PROJ.NO.	
DATE 05/01/2003						10		WASH							
						JOB NUMBER									
DESIGNED BY V. LEE								CONTRACT NO.						LOCATION NO.	
ENTERED BY H. TRINH															
CHECKED BY D. DO															
PROJ. ENGR. B. BRIGGS												SHEET 14 OF 16 SHEETS			
REGIONAL ADM. L. ENG		REVISION		DATE		BY									
										DATE P.E. STAMP BOX		DATE P.E. STAMP BOX		TRAFFIC CONTROL PLAN	



- 1) ACTUAL PLAQUE MESSAGES TO BE DETERMINED BY THE ENGINEER.
- 2) VERIFY SIGN LOCATION WITH ENGINEER.
- 3) SIGN R11-1501 TO BE PLACED FIVE DAYS IN ADVANCE OF THE CLOSURE.
- 4) R11-1501 SIGN TO BE REMOVED DURING CLOSURE.
- 5) USE "EXIT" FOR OFF RAMPS AND "RAMP" FOR ON RAMPS.
- 6) DETOUR FOR RAMP OR EXIT CLOSURES SHALL BE PROVIDED.

LEGEND

	TRAFFIC SAFETY DRUMS
	TYPE 3 BARRICADE SEE STD. PLAN H-2